

GV-Expansion System V3 16 Bays & 24 Bays

User's Manual





© 2018 GeoVision, Inc. All rights reserved.

Under the copyright laws, this manual may not be copied, in whole or in part, without the written consent of GeoVision.

Every effort has been made to ensure that the information in this manual is accurate.

GeoVision, Inc. makes no expressed or implied warranty of any kind and assumes no responsibility for errors or omissions. No liability is assumed for incidental or consequential damages arising from the use of the information or products contained herein. Features and specifications are subject to change without notice.

GeoVision, Inc.

9F, No. 246, Sec. 1, Neihu Rd.,

Neihu District, Taipei, Taiwan

Tel: +886-2-8797-8377

Fax: +886-2-8797-8335

<http://www.geovision.com.tw>

Trademarks used in this manual: *GeoVision*, the *GeoVision* logo and GV series products are trademarks of GeoVision, Inc. *Windows*, *Windows XP*, *Windows Vista* and *Windows 7* are registered trademarks of Microsoft Corporation.

August 2018

Table of Contents

Chapter 1	Introduction	1
1.1	Features	2
1.2	Technical Specifications	3
1.3	Unpacking GV-Expansion System V3	4
1.3.1	GV-Expansion System V3 16 Bays	4
1.3.2	GV-Expansion System V3 24 Bays	5
1.4	Identifying Parts of GV-Expansion System V3 16 Bays	6
1.4.1	Front View	6
1.4.2	Rear View	6
1.4.3	JBOD Controller Module	7
1.5	Identifying Parts of GV-Expansion System V3 24 Bays	8
1.5.1	Front View	8
1.5.2	Rear View	8
1.5.3	JBOD Controller Module	9
1.6	Power Supply / Fan Module (PSFM)	10
1.6.1	PSFM Panel	10
1.6.2	Power Supply Module LED	10
1.7	LCD Display Panel	11
1.7.1	LCD Panel LED	11
1.7.2	LCD Panel Function Buttons	12
1.7.3	Menu Diagram	13
1.8	Drive Carrier Module	14
1.8.1	Disk Drive Status Indicators	14
1.8.2	Drive Carrier Lock Indicator	15
Chapter 2	Installation of GV-Expansion System V3	16
2.1	Powering On	16
2.2	Disk Drive Installation	17
2.2.1	Installing Disk Drive in a Disk Tray	17
2.2.2	Installing 2.5" Disk Drive in a Disk Tray	20
2.3	Connecting GV-Expansion System V3	21
2.3.1	Connecting to SAS HBA	21
2.3.2	Connecting to GV-Expansion System V3	21
Chapter 3	Maintenance	22
3.1	Upgrading JBOD Controller's Firmware	22
3.2	Replacing Components	26
3.2.1	Replacing Controller Module with Blanking Plate	26
3.2.2	Replacing Power Supply Fan Module	27

Chapter 1 Introduction



GV-Expansion System V3 16 Bays



GV-Expansion System V3 24 Bays

GV-Expansion System V3 16 Bays is a 19-inch 3U rackmount JBOD unit with optimized solutions for servers and external storage systems. GV-Expansion System V3 24 Bays is a 19-inch 4U rackmount JBOD unit. Both feature the latest SAS 3.0 12Gb/s interface and designed to fit in with the environments which needed highly reliable and relentless data growth.

GV-Expansion System V3 16 Bays and 24 Bays incorporate the latest enhancements in SAS along with LSI DataBolt bandwidth optimizer technology (EDFB, End Device Frame Buffering). Using DataBolt, they deliver optimized throughput by allowing users to gain 12Gb/s host speeds with current-generation 6Gb/s drives. They are also versatile SAS3 / SATA3 disk expansion systems, ideal for high capacity and scalability storage in IT demands. GV-Expansion System V3 16 Bays and 24 Bays offer GUI management to monitor enclosure environmental conditions through a remote connection.

1.1 Features

- 3U, 16-bay hot-swap SAS III / SATAIII HDD or SSD drivers for data storage for GV-Expansion System V3 16 Bays
- 4U, 24-bay hot-swap SAS III / SATA III HDD or SSD drivers for data storage for GV-Expansion System V3 24 Bays
- LSI DataBolt bandwidth optimizer technology
- Fully redundant & hot pluggable designs: power supplies and fans
- Cableless design for maximum signal integrity
- industry-standard SCSI enclosure services to monitor enclosure and disk environmental conditions
- S.E.S. support for standard enclosure management
- System LED indications
- Monitoring: Fan speed, power supply, system voltage and system temperature
- System alarm
- Storage capacity up to 192 TB (with 8 TB HDD) for 24 Bays
- Storage capacity up to 128 TB (with 8 TB HDD) for 16 Bays

1.2 Technical Specifications








RAID Controller	JBOD	
JBOD Controller	Single	
Host Interface	16 Bays	One 4x mini SAS HD (12Gb/s)
	24 Bays	One 4x mini SAS HD (12Gb/s)
Disk Interface	12Gb/s SAS, 6Gb/s SATA	
SAS expansion	16 Bays	Two 4x mini SAS HD (12Gb/s)
	24 Bays	Three 4x mini SAS HD (12Gb/s)
Enclosure		
Platform	Rackmount	
Form Factor	16 bays	3U
	24 bays	4U
# of Hot Swap Trays	16 bays	16
	24 bays	24
Disk Status Indicator	Access / Fail LED	
Backplane	16 bays	SAS / SATA Single BP
	24 Bays	SAS / SATA BP
# of PS/Fan Modules	500W x 2 w/PFC	
# of Fans	4	
Power requirements	AC 90V ~ 264V Full Range, 10A ~ 5A, 47Hz ~ 63Hz	
Environmental		
Relative Humidity	10% ~ 85% Non-condensing	
Operating Temperature	10°C ~ 40°C (50°F ~ 104°F)	
Physical Dimension	16 bays	482 (W) x 131 (H) x 590 (D) mm / 18.68 x 5.16 x 23.22 in
	24 Bays	482 (W) x 176 (H) x 607 (D)mm / 18.98 x 6.92 x 23.90 in
Weight (Without Disk)	16 bays	24 / 25 Kgs
	24 Bays	26.5 / 27.5Kgs

Specification is subject to change without notice.

1.3 Unpacking GV-Expansion System V3

1.3.1 GV-Expansion System V3 16 Bays








The shipping package contains the following:

	GV-Expansion System V3 16 Bays
	Two (2) power cords
	One (1) external serial cable RJ11-to-DB9
	One (1) mini SAS HD cable
	One (1) Ethernet LAN cable
	One(1) PSFM Blanking Plate
	Screws (packet)
	Rail Kit
	Download Guide

NOTE: If any damage is found, contact the dealer or vendor for assistance.

1.3.2 GV-Expansion System V3 24 Bays

The shipping package contains the following:

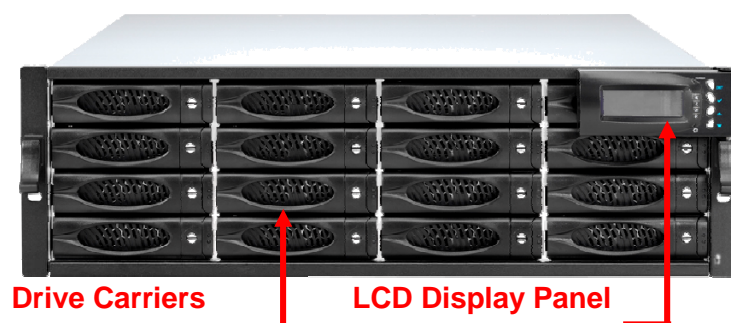
	GV-Expansion System V3 24 Bays
	Two (2) power cords
	One (1) external serial cable RJ11-to-DB9
	One (1) mini SAS HD cable
	One (1) Ethernet LAN cable
	One(1) PSFM Blanking Plate
	Screws (packet)
	Rail Kit
	Download Guide

NOTE: If any damage is found, contact the dealer or vendor for assistance.

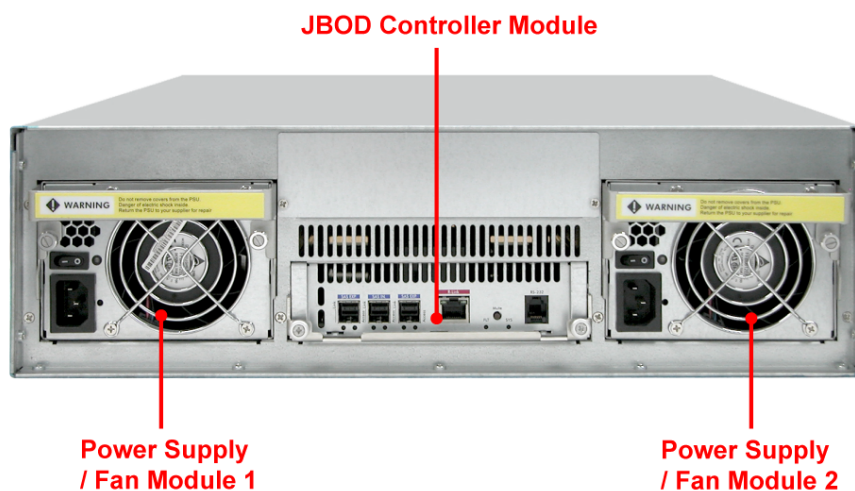
1.4 Identifying Parts of GV-Expansion System V3 16 Bays

The illustrations below identify the various parts of GV-Expansion System V3 16 bays.

1.4.1 Front View

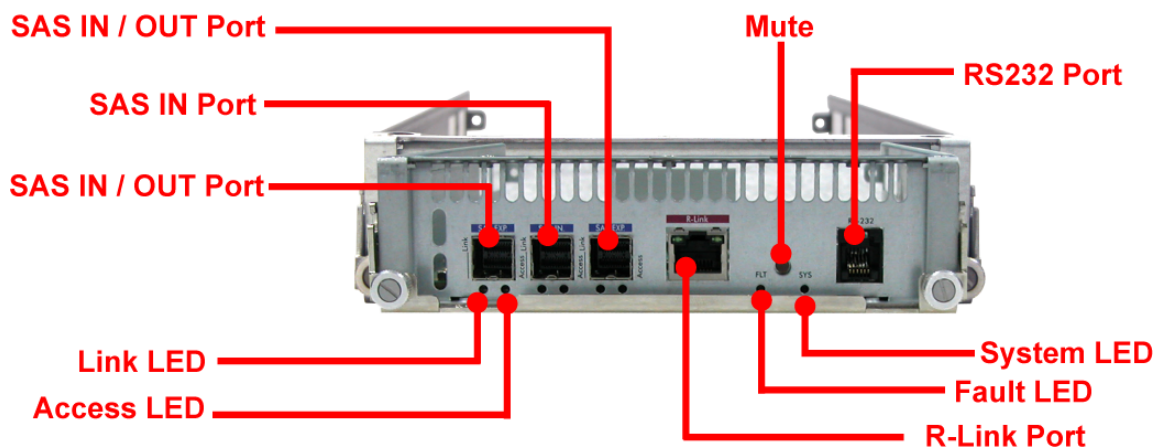


1.4.2 Rear View



1.4.3 JBOD Controller Module

1.4.3.1 JBOD Controller Panel



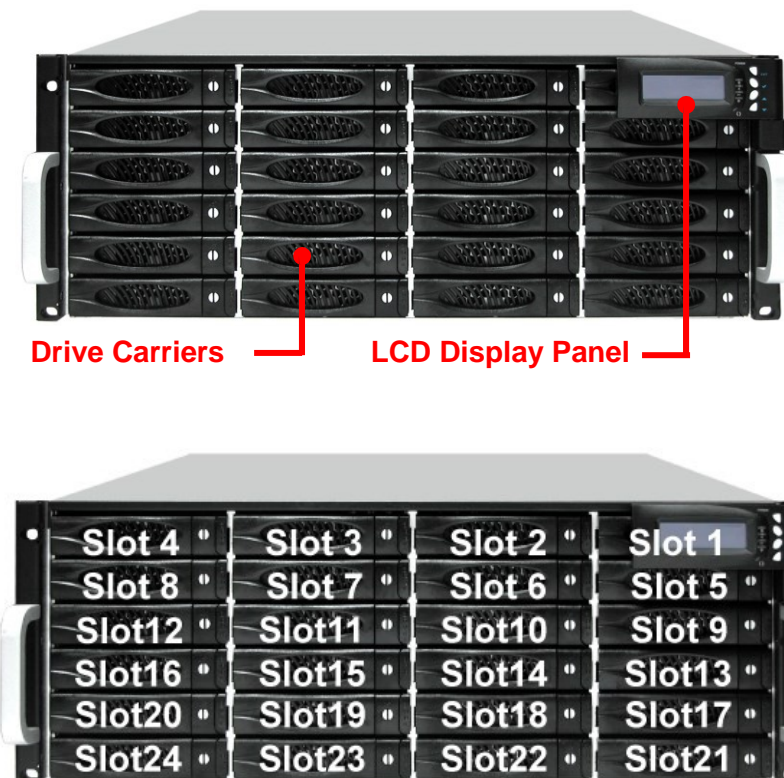
NOTE: SAS IN/OUT Port can be flexibly configured as either SAS IN PORT or SAS OUT PORT by customer's request

- **SAS IN Port:** SAS cable must be connected to this port and to the SAS HBA, or other Expansion Chassis's SAS Expansion Port, if this chassis is connected in daisy-chain.
- **SAS OUT Port:** SAS cable must be connected to these ports and to other SAS IN Port of other expansion chassis for daisy-chaining.
- **Link LED (SAS IN and SAS OUT):** Green indicates SAS IN/OUT Port has connected or linked.
- **Access LED (SAS IN and SAS OUT):** Blue indicates SAS IN/OUT Port is being accessed.
- **RS-232 Port:** Used for upgrading the Firmware of JBOD controller in the Expansion Chassis.
- **Mute:** Use this button to silence the alarm beeper. If another failure event happens, the alarm beeper will sound again and this button can be pressed again to silence alarm.
- **System LED:** Green indicates Expansion Chassis is Powered On and Ready.
- **Fault LED:** Red (LED is on) indicates there is problem within the Expansion Chassis. If LED is off, the Expansion Chassis is in normal condition.
- **R-Link Port:** Use to connect to Telnet for upgrading the Firmware of JBOD controller

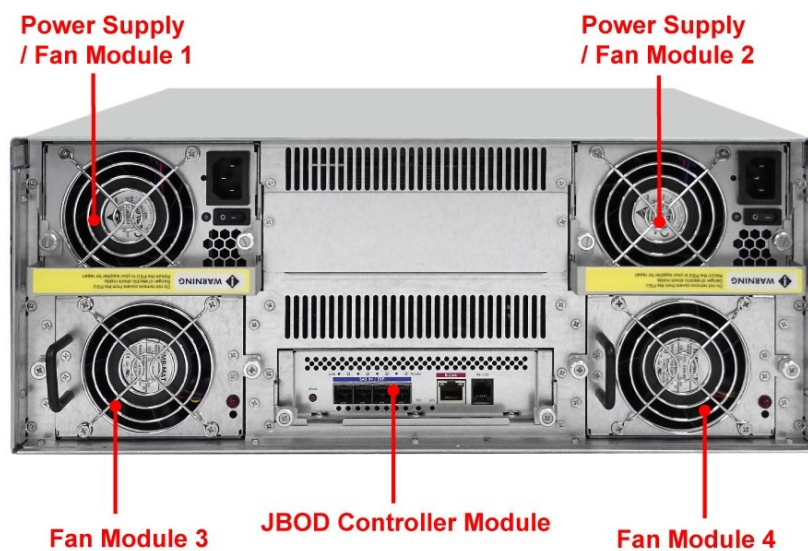
1.5 Identifying Parts of GV-Expansion System V3 24 Bays

The illustrations below identify the various parts of GV-Expansion System V3 24 Bays.

1.5.1 Front View

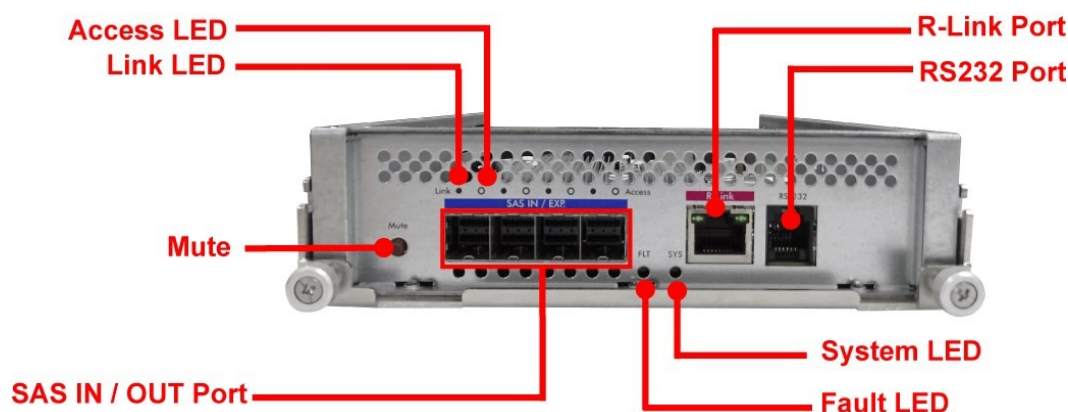


1.5.2 Rear View



1.5.3 JBOD Controller Module

1.5.3.1 JBOD Controller Panel



NOTE: SAS IN/OUT Port can be flexibly configured as either SAS IN PORT or SAS OUT PORT by customer's request.

- **SAS IN Port:** SAS cable must be connected to this port and to the SAS HBA, or other GV-Expansion System V3's SAS Expansion Port, if this chassis is connected in daisy-chain.
- **SAS OUT Port:** SAS cable must be connected to these ports and to other SAS IN Port of other GV-Expansion System V3 for daisy-chaining.
- **Link LED (SAS IN and SAS OUT):** Green indicates SAS IN/OUT Port has connected or linked.
- **Access LED (SAS IN and SAS OUT):** Blue indicates SAS IN/OUT Port is being accessed.
- **RS-232 Port:** Used for upgrading the Firmware of JBOD controller in the GV-Expansion System V3.
- **Mute:** Use this button to silence the alarm beeper. If another failure event happens, the alarm beeper will sound again and this button can be pressed again to silence alarm.
- **System LED:** Green indicates the system is Powered On and Ready.
- **Fault LED:** Red (LED is on) indicates there is problem within GV-Expansion System V3.
 - If LED is off, GV-Expansion System V3 is in normal condition.
- **R-Link Port:** Use to connect to Telnet for upgrading the Firmware of JBOD controller

1.6 Power Supply / Fan Module (PSFM)

GV-Expansion System V3 contains **two 500W Power Supply / Fan Modules**. All PSFMs are inserted into the rear of the chassis.

1.6.1 PSFM Panel



The Power Supply/Fan Module panel has: Power On/Off Switch, the AC Inlet Plug, and a Power On/Fail Indicator showing the Power Status LED, indicating ready or fail.

Each fan within a PSFM is powered independently of the power supply within the same PSFM. So if the power supply of a PSFM fails, the fan associated with that PSFM will continue to operate and cool the enclosure.

1.6.2 Power Supply Module LED







When the power cord connected from main power source is inserted to the AC Power Inlet, the power status LED becomes **RED**. When the switch of the PSFM is turned on, the LED will turn **GREEN**. When the Power On/Fail LED is **GREEN**, the PSFM is functioning normally.

1.7 LCD Display Panel




1.7.1 LCD Panel LED



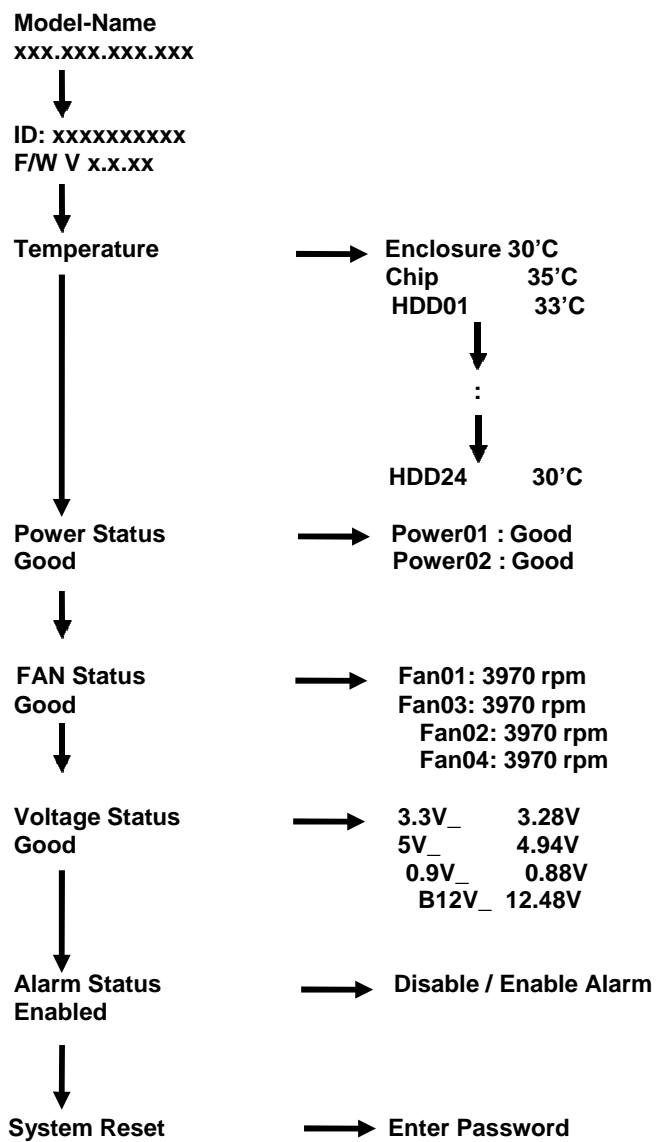
Parts	Function
Power LED	Green indicates power is ON.
Power Fail LED 	If one of the redundant power supply unit fails, this LED will turn to RED and alarm will sound.
Fan Fail LED 	Turn RED when fan 1 or 2 fails, or speed is lower than 3000 RPM for Master Fan and 2500 RPM for Slave Fan.
Over Temperature LED 	If system temperature is over 70°C or disk temperatures exceed 55°C, the Over Temperature LED will turn RED and alarm will sound.
Voltage Warning LED 	An alarm will sound if detected voltage in the controller is abnormal and LED will turn RED.

1.7.2 LCD Panel Function Buttons



Parts	Function
Up and Down Arrow buttons	Use the Up or Down arrow keys to go through the information on the LCD screen. This is also used to move between each menu.
Select button 	This is used to enter the option you have selected.
Exit button EXIT	<p>Press this button to return to the previous menu.</p> <p>NOTE: This button can also be used to silence the alarm beeper when in main menu. If you are in submenu and a failure event happens, press the EXIT button few times as necessary to go back to main menu, and press again to silence the alarm.</p>

1.7.3 Menu Diagram



1.8 Drive Carrier Module

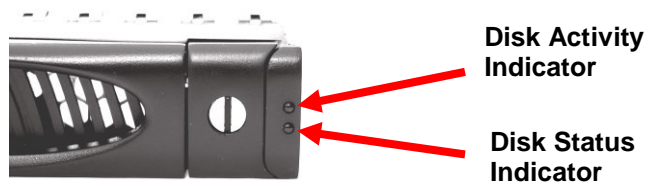
The Drive Carrier Module houses a 3.5 inch hard disk drive. It is designed for maximum airflow and incorporates a carrier locking mechanism to prevent unauthorized access to the HDD.

1.8.1 Disk Drive Status Indicators

Every Drive Carrier has 2 status indicator lights. One indicator light is used for Power On/Error. When this light is **GREEN** the power is on and everything is functioning normally. When the Power On/Error light is **RED**, then an error has happened that requires the user's attention.

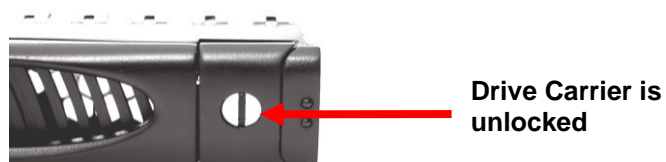
The other status indicator light is the hard disk drive access light. When the hard disk drive is being accessed, this light will flash **BLUE**.

In addition, both indicator lights are viewable within a 170° arc.



1.8.2 Drive Carrier Lock Indicator

Every Drive Carrier is lockable and is fitted with a lock indicator to indicate whether or not the carrier is locked into the chassis or not. Each carrier is also fitted with an ergonomic handle for easy carrier removal.



When the Lock Groove is vertical, then the Drive Carrier is unlocked.



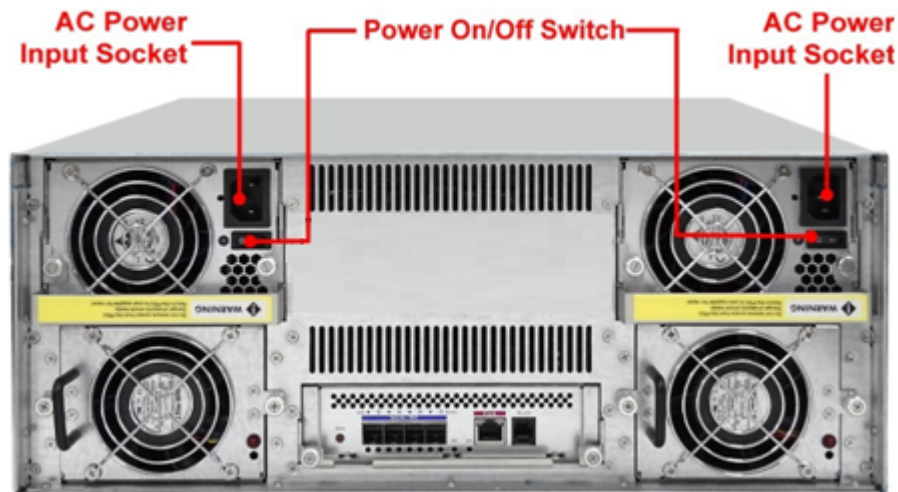
When the Lock Groove is horizontal, this indicates that the Drive Carrier is locked.

Lock and unlock the Drive Carriers by using a flat-head screw driver.

Chapter 2 Installation of GV-Expansion System V3

2.1 Powering On

1. Plug in the power cords into the AC Power Input Socket located at the rear of GV-Expansion System V3.



NOTE: The system is equipped with redundant, full range power supplies with PFC (power factor correction). The system will automatically select voltage. If you are in an area with unstable voltage, make sure to install an automatic voltage regulator (AVR) or a UPS power supply with AVR function, to maintain a constant voltage. All damages to the power supply caused by unstable voltage are not included in the 2-year warranty service.

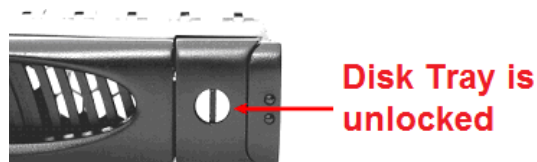
2. Turn on each Power On/Off Switch to power on GV-Expansion System V3.
3. The Power LED on the front Panel will turn green.

2.2 Disk Drive Installation

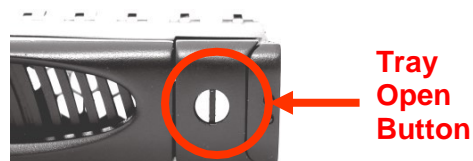
This section describes the physical locations of the hard drives supported by GV-Expansion System V3 and give instructions on installing a hard drive. GV-Expansion System V3 supports hot-swapping allowing you to install or replace a hard drive while it is running.

2.2.1 Installing Disk Drive in a Disk Tray

1. Unlock the Disk Trays using a flat-head screw driver by rotating the Lock Groove.



2. Press the Tray Open button and the Disk Tray handle will flip open.

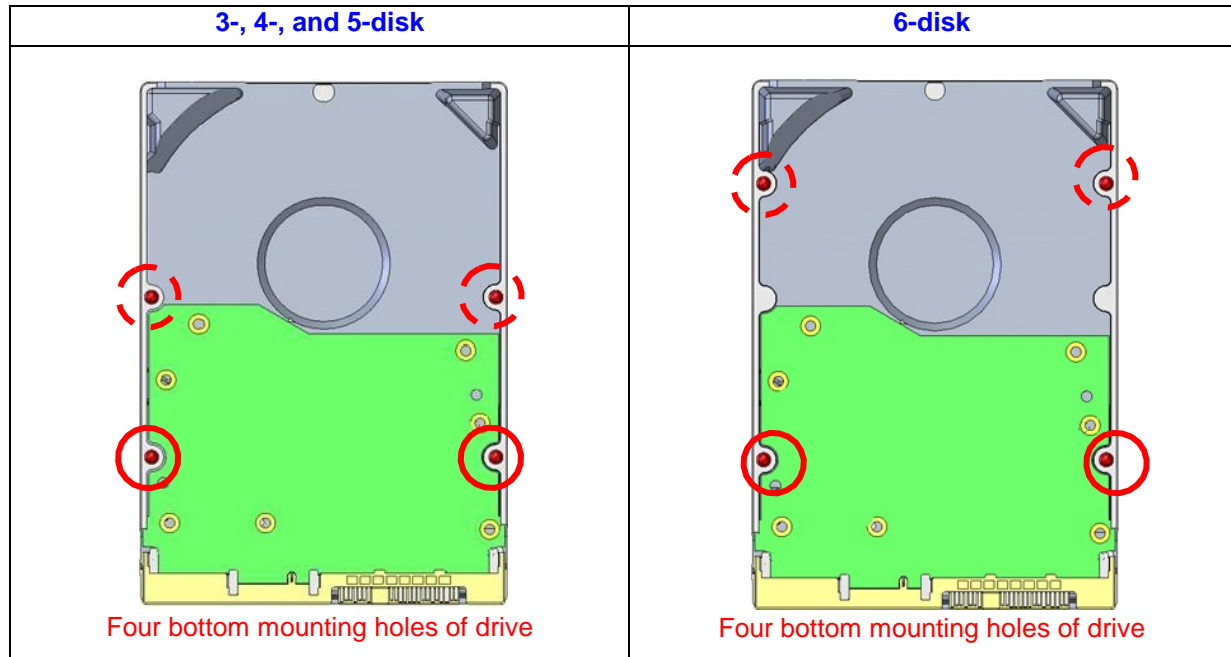


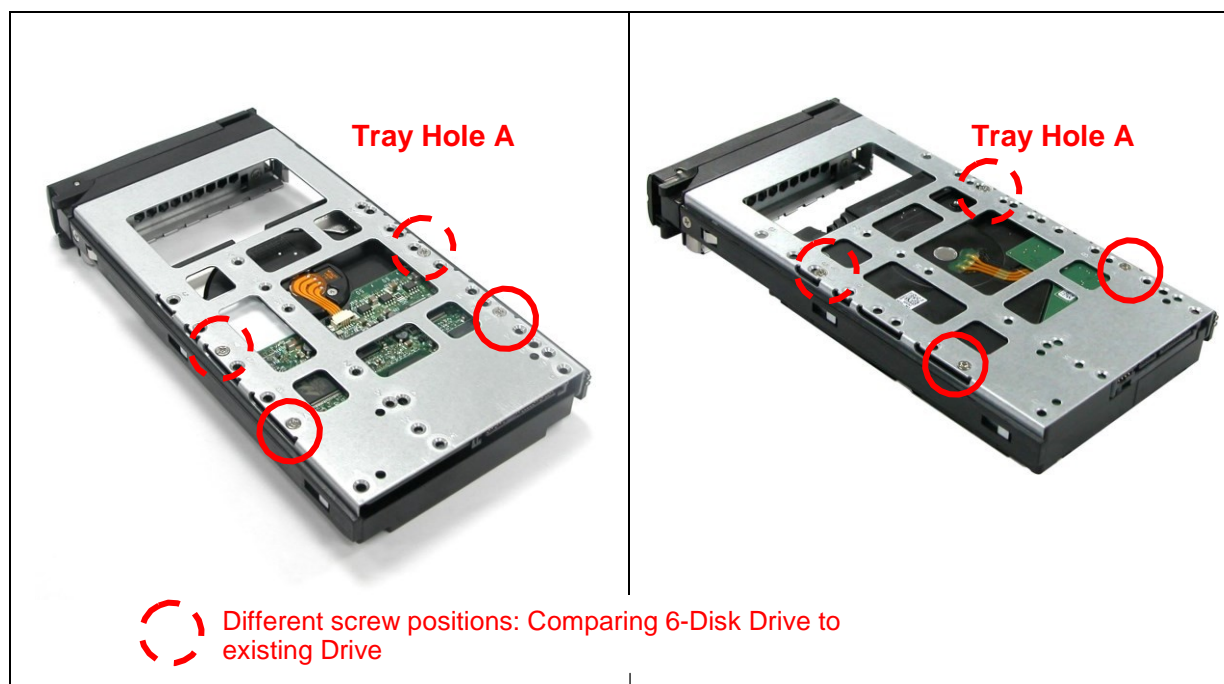
3. Pull out an empty disk tray.

4. Place the hard drive in the disk tray. Turn the disk tray upside down. Align the four screw holes of the SAS disk drive in the four Hole A of the disk tray. To secure the disk drive into the disk tray, tighten four screws on these holes of the disk tray. Note in the picture below where the screws should be placed in the disk tray holes.



NOTE: The mounting hole locations of the new 6-disk are different from the existing drives.



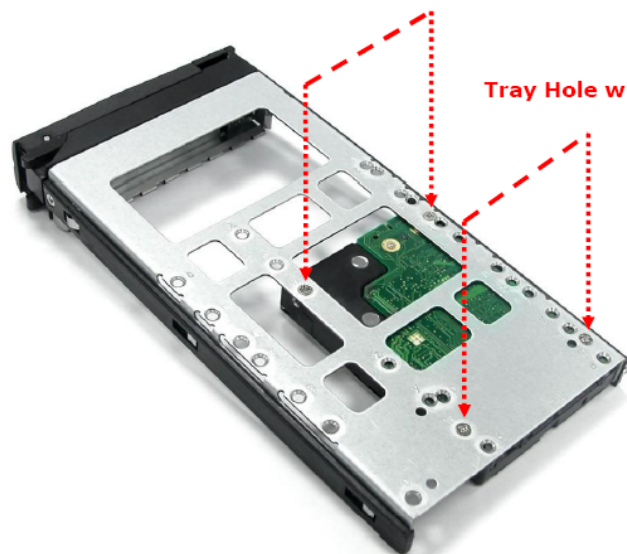


NOTE: All the disk tray holes are labelled accordingly.

5. Slide the tray into a slot.
6. Press the lever in until you hear the latch click into place. The HDD Fault LED will turn green when GV-Expansion System V3 is powered on and HDD is good.
7. If necessary, lock the Disk Tray by turning the Lock Groove.

2.2.2 Installing 2.5" Disk Drive in a Disk Tray

1. Remove an empty disk tray from GV-Expansion System V3.
2. Place the disk drive in the disk tray. Turn the disk tray upside down. Align the four screw holes of the disk drive in the four *Hole w* of the disk tray. To secure the disk drive into the disk tray, tighten four screws on these holes of the disk tray. Note in the picture below where the screws should be placed in the disk tray holes.



NOTE: All the disk tray holes are labelled accordingly.

3. Slide the tray into a slot.
4. Press the lever in until you hear the latch click into place. The HDD Fault LED will turn green when GV-Expansion System V3 is powered on and HDD is good.

2.3 Connecting GV-Expansion System V3

2.3.1 Connecting to SAS HBA

GV-Expansion System V3 supports SAS interface which provides fast 600MB data transfer rate using SAS phy. Attach one end of the SAS cable to the SAS IN Port and the other end to the host bus adapter's (HBA) external SAS connector or to the SAS Switch. (The host bus adapter is installed in your Host computer system.)

2.3.2 Connecting to GV-Expansion System V3

Attach one end of the SAS cable to the SAS IN Port of the GV-Expansion System V3 controller module and the other end to the SAS Expansion Port on the RAID controller of GV-Expansion System V3. If configured in redundant mode, connect the other SAS cable to the SAS IN Port of the other JBOD controller, and the other end to the SAS Expansion Port on the other RAID controller of GV-Expansion System V3.

Chapter 3 Maintenance

3.1 Upgrading JBOD Controller's Firmware



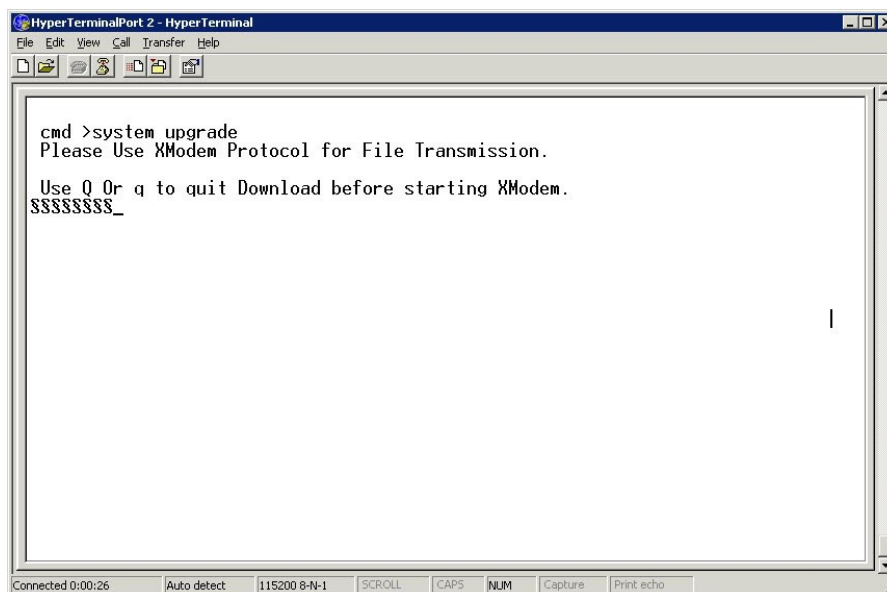
IMPORTANT: Before upgrade the JBOD firmware, please shut down server first or make sure no array setting on the disks. The new firmware will effective after the power cycle.



NOTE: Upgrading the firmware must be done from Master JBOD Controller (JBOD Controller 1) if GV-Expansion System V3 has redundant JBOD Controllers.

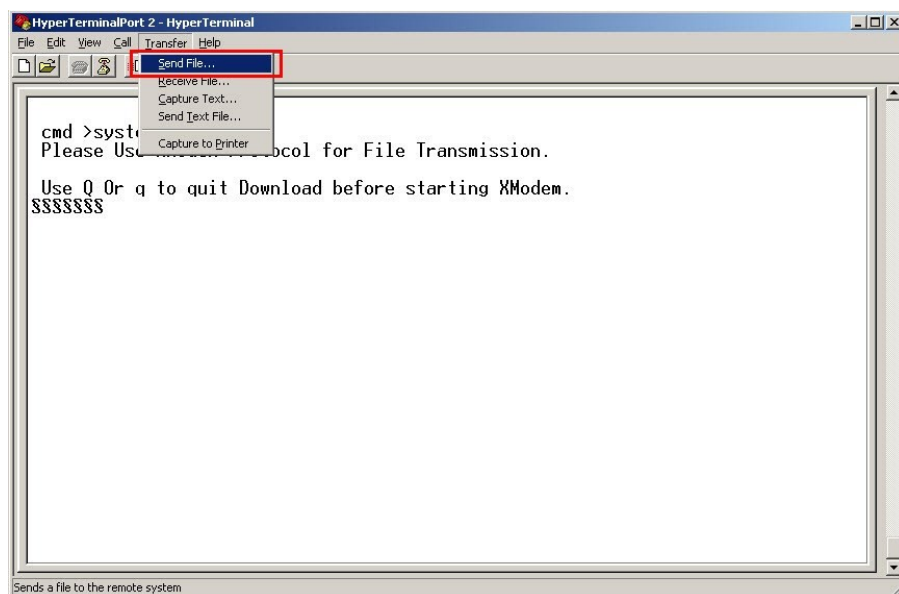
Steps:

1. Use the RS232 cable (Phone jack to DB9) to JBOD Controller #1 and to connect JBOD RS232 Port and PC COM1 Port (or change to other COM Port as necessary).
2. Open Windows HyperTerminal Program. Connect using COM1 (COM Port used in Step1), Baud Rate: 115200, n, 8, 1, Flow Control: None.
3. Type "system upgrade", and press "Enter" in command line.

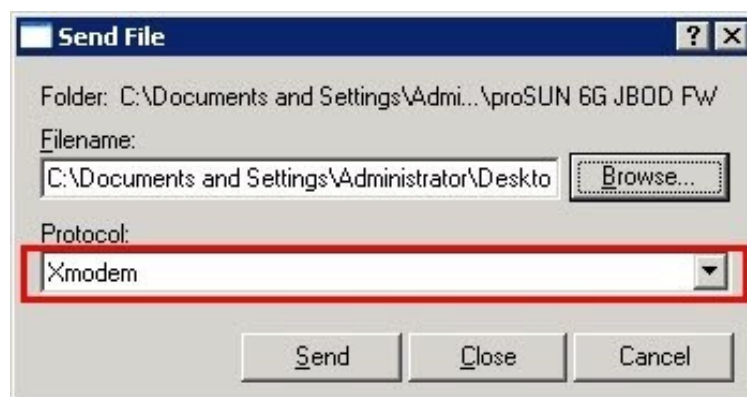


4. Select Transfer & Send File.

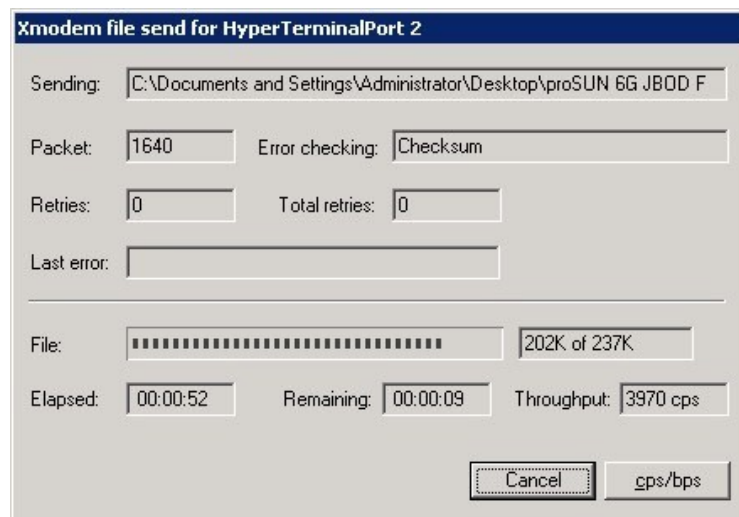
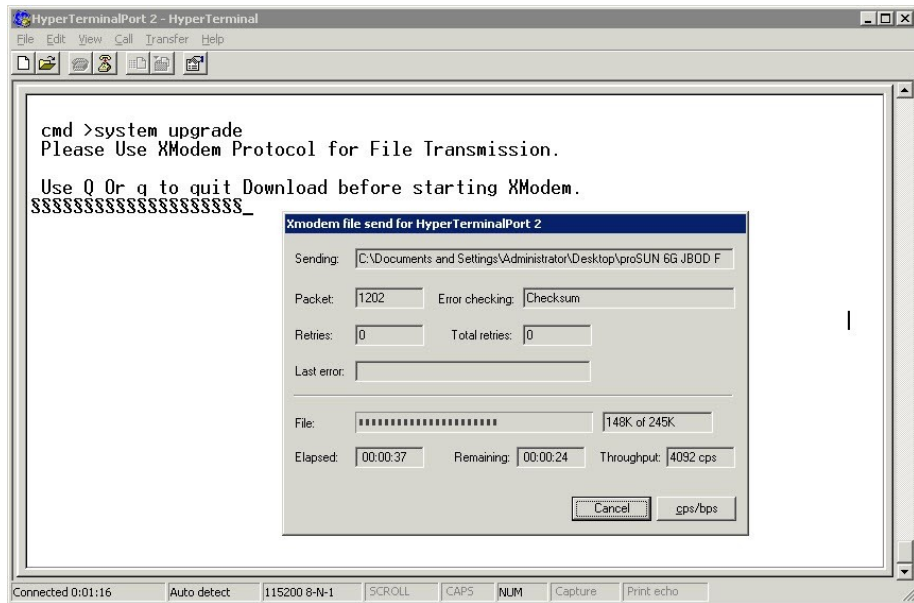
You must finish within 25 seconds



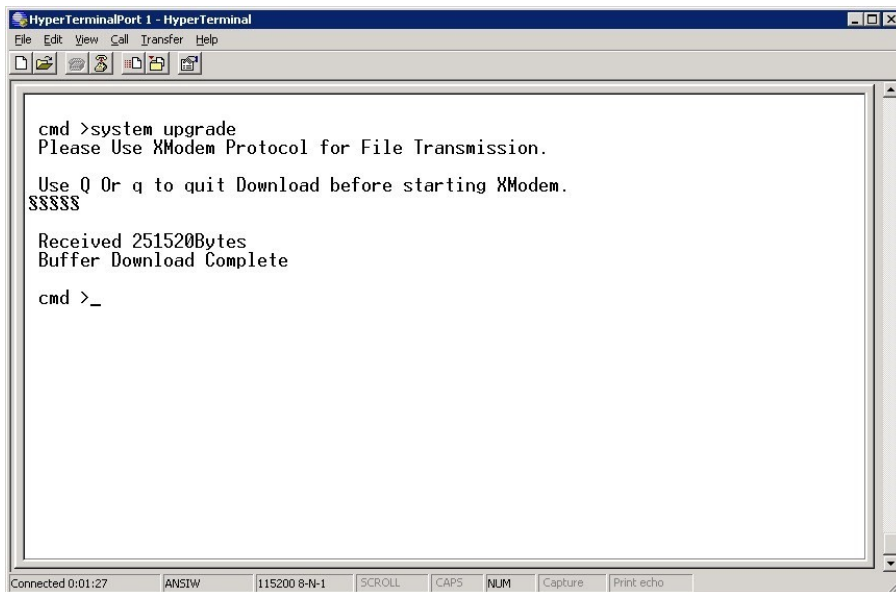
5. Select your firmware file path, and select Xmodem in the communication protocol, and click transfer button.



6. Wait for the transfer of file to complete.



7. When the transfer and firmware update is complete, please power cycle the JBOD.



```

cmd >system upgrade
Please Use XModem Protocol for File Transmission.

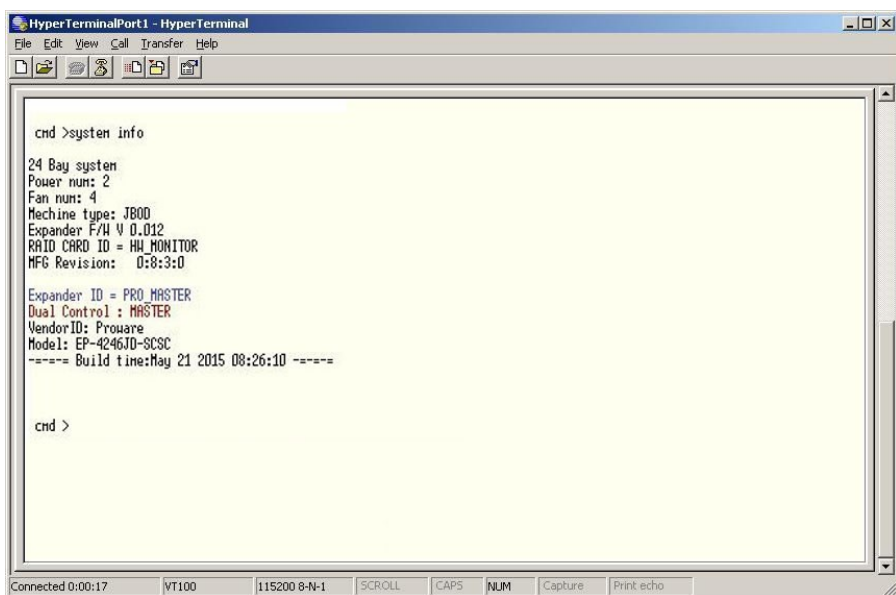
Use Q Or q to quit Download before starting XModem.
SSSSS

Received 251520Bytes
Buffer Download Complete

cmd >_
  
```

Connected 0:01:27 ANSIW 115200 8-N-1 SCROLL CAPS NUM Capture Print echo

8. In command line, type “system info”, you can see the Expander firmware version.



```

cmd >system info

24 Bay system
Power num: 2
Fan num: 4
Machine type: J800
Expander F/W V 0.012
RAID CARD ID = HH MONITOR
MFG Revision: 0:8:3:0

Expander ID = PRO_MASTER
Dual Control : MASTER
VendorID: Prouare
Model: EP-4246JD-SCSC
==== Build time:May 21 2015 08:26:10 ====

cmd >
  
```

Connected 0:00:17 VT100 115200 8-N-1 SCROLL CAPS NUM Capture Print echo

3.2 Replacing Components



NOTE: The information in this section only applies to GV-Expansion System V3 24 Bays.

3.2.1 Replacing Controller Module with Blanking Plate

When replacing a failed Controller Module with Blanking Plate, please follow these steps:

1. Loosen thumbscrews of the failed Controller Module.
2. Use the Controller Module handle to remove the failed Controller Module from GV-Expansion System V3.
3. Insert the Controller Blanking Plate included in your package.



4. Tighten the screws of the Blanking Plate.



When replacing a failed component online, it is not recommended to remove the failed component for a long period of time; proper air flow within the enclosure might fail causing high controller/disk drive temperature.

3.2.2 Replacing Power Supply Fan Module

When replacing a failed power supply fan module (PSFM), please follow these steps:

1. Turn off the Power On/Off Switch of the failed PSFM.
2. Disconnect the power cord from the AC Inlet Plug of PSFM.
3. Loosen thumbscrews of the PSFM.
4. Use the handle to pull out the defective PSFM.
5. Before inserting the new PSFM, make sure the Power On/Off Switch is on "Off" state.
6. Insert and slide the new PSFM in until it clicks into place.



IMPORTANT: When GV-Expansion System V3 is online and a Power Supply fails, and the replacement Power Supply module is not yet available, the failed Power Supply Module can be replaced with the Plate Cover. This is to maintain proper airflow within the enclosure. (Refer to next section)

When replacing a failed component online, it is not recommended to remove the failed component for a long period of time; proper air flow within the enclosure might fail causing high controller/disk drive temperature.

7. Connect the power cord to the AC Inlet Plug of PSFM.
8. Tighten the thumbscrews of the PSFM.
9. Turn on the Power On/Off Switch of the PSFM.



NOTE: After replacing the Power Supply Fan Module and turning on the Power On/Off Switch of the PSFM, the Power Supply will not power on immediately. The Fans in the PSFM will spin-up until the RPM becomes stable. When Fan RPM is already stable, the RAID controller will then power on the Power Supply. This process takes more or less 30 seconds. This safety measure helps prevent possible Power Supply overheating when the Fans cannot work.